AMENDMENTS TO THE CLAIMS

Claims 1-12 (Cancelled)

13. (New) A system for producing a presettable polarization mode dispersion, comprising:

a first polarization splitter/combiner with a first port, a second port, a third port, and a fourth port, wherein an input signal received at the first port is split into two split signals that are in vertical polarization alignment with one another and coupled out the second and third ports, and wherein a first signal coupled into the second port and a second signal coupled into the third port are combined into an output signal that is coupled out of the fourth port;

a second polarization splitter/combiner with a fifth port, a sixth port, a seventh, and an eighth port, wherein the fifth port is coupled to receive the first split signal from the second port and the sixth port is coupled to receive the second split signal from the third port, the first split signal and the second split signal being combined to provide a combined signal at the seventh port, and wherein a twisted signal presented at the eighth port is split into two signals that are coupled out of the fifth port and the sixth port;

a delay element coupled between the third port and the sixth port;

a twisting element coupled between the seventh port and the eighth port and producing the twisted signal, wherein a polarization main axis of the combined signal and a polarization main axis of the twisted signal are rotated towards one another by an appropriate angle.

14. (New) System according to Claim 13, wherein the angle in the twisting element is adjustable.

15. (New) System according to Claim 13, wherein the angle in the twisting element is approximately 22.5 degrees.

16. (New) System according to Claim 13, wherein the delay element is produced optically, electrically or mechanically.

17. (New) System according to Claim 13, wherein the split signal travels through the delay element as a free beam, and length of a delay path within the delay element is adjustable.

18. (New) System according to Claim 13, wherein delay in the delay element is produced by exposing a delay path of the delay element-to mechanical forces.

19. (New) System according to Claim 13, wherein the angle of the twisting element is adjusted by splicing two PM fibers together at an angle corresponding to the angle to be adjusted.

20. (New) System according to Claim 13, wherein the angle of the twisting element is adjusted by optical slip rings and/or oblique-standing wave plates.

21. (New) System according to Claim 13, wherein the first and the second polarization splitter/combiner elements are constructed as PBS cubes or as all-in-fiber elements.

22. (New) System according to Claim 13, wherein light paths are polarization-maintaining.

23. (New) System according to Claim 13, wherein light paths are free-beam paths and/or PM fibers.

24. (New) A system for producing a presettable polarization mode dispersion, comprising:

a first polarization splitter/combiner that provides two split signals that are in vertical polarization alignment with each other and that correspond with an input signal;

a second polarization splitter/combiner coupled to the first polarization splitter/combiner that receives the two split signals and combines the two split signals to provide a combined signal;

a delay element coupled between the first polarization splitter/combiner and the second polarization splitter/combiner so that one of the two split signals is delayed;

a twisting element coupled to the second polarization splitter/combiner to receive the combined signal and to provide to the second polarization splitter/combiner a twisted signal, wherein a polarization main axis of the combined signal and a polarization main axis of the twisted signal are rotated towards one another by an appropriate angle; and

wherein the second polarization splitter/combiner splits the twisted signal into two split twisted signals and outputs the two split twisted signals both along paths of the two split signals but in the opposite direction of the two split signals, and wherein the first polarization splitter/combiner receives the two split twisted signals and combines them into an output signal.

25. (New) System according to Claim 24, wherein the angle in the twisting element is adjustable.

26. (New) System according to Claim 24, wherein the angle in the twisting element is approximately 22.5 degrees.

27. (New) System according to Claim 24, wherein the delay element is produced optically, electrically or mechanically.

28. (New) System according to Claim 24, wherein the split signal travels through the delay element as a free beam, and length of a delay path within the delay element is adjustable.

29. (New) System according to Claim 24, wherein delay in the delay element is produced by exposing a delay path of the delay element-to mechanical forces.

30. (New) System according to Claim 24, wherein the angle of the twisting element is adjusted by splicing two PM fibers together at an angle corresponding to the angle to be adjusted.

31. (New) System according to Claim 24, wherein the angle of the twisting element is adjusted by optical slip rings and/or oblique-standing wave plates.

32. (New) System according to Claim 24, wherein the first and the second polarization splitter/combiner elements are constructed as PBS cubes or as all-in-fiber elements.

33. (New) System according to Claim 24, wherein light paths are polarization-maintaining.

34. (New) System according to Claim 24, wherein light paths are free-beam paths and/or PM fibers.

35. (New) Method of producing a presettable polarization mode dispersion, comprising the following steps:

feeding an input signal in a first polarization splitter/combiner with a first port, a second port, a third port and a fourth port, wherein the input signal is received at the first port and split into two split signals that are in vertical polarization alignment with one another and are coupled out of the second and third ports,

passing the two split signals through signal paths, wherein one of the signal paths comprises a delay,

feeding the two split signals into a second polarization splitter/combiner with a fifth port, a sixth port, a seventh port and an eighth port, wherein the second polarization splitter/combiner receives the two split signals in the fifth and the sixth ports, combines the two split signals to provide a combined signal coupled out of the seventh port;

feeding the combined signal into a twisting element wherein the twisting element receives the combined signal and provides a twisted signal, wherein a polarization main axes of the combined signal and a polarization main axes of the twisted signal are rotated towards one another by an appropriate angle;

feeding the twisted signal into the eighth port of the second polarization splitter/combiner which splits the twisted signal into two split twisted signals and outputs the two split twisted signals from the fifth and the sixth ports of the second polarization splitter/combiner;

passing the two split twisted signals through the signal paths and

feeding the two split twisted signals into the second and third ports of the first polarization splitter/combiner wherein the two split twisted signals are combined into an output signal, and the output signal is coupled out of the fourth port of the first polarization splitter/combiner.